effective diagnostic tool for intracoronary assessment of vulnerable plaques, with diagnostic accuracy of 83%. This novel modality may provide guidance for future selective intracoronary treatment for VPs prone to rupture.

1151-198 Qualitative Results of Intracoronary Imaging During Balloon Inflation With Optical Coherence Tomography in Humans

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Background: Intracoronary imaging with optical coherence tomography (OCT) is limited by the presence of red blood cells. Imaging from the lumen of an inflated balloon catheter is a potential solution. The aim of this study was to assess the feasibility and safety of intra-lumenal OCT during balloon inflation. *Methods:* Digital images were collected using a 0.014 imaging wire positioned in the guide wire lumen. *Results:* We studied 10 pts for a total of 13 OCT imaging runs (8 native coronary artery and 5 vein graft). Inflated balloon diameters ranged from 1.5-2.5 mm. Mean coronary reference diameter was 3.15 ± 0.47 mm (range 2.25-3.27 mm). Both stented and non-stented segments were imaged. Mean inflation duration was 46.3 ± 25.9 sec. Interpretable image runs were obtained in 9/10 pts. Within stented segments, struts were seen as sharp, undistorted with spatial resolution superior to intravascular ultrasound. Within non-stented segment, layers of the arterial wall were easily distinguished (intimal hyperplasia, media and adventitia) and in narrowed segments the effects of balloon inflation on arterial architecture were quantifiable. No pt had a major adverse coronary event (death, myocardial infarction, need of urgent bypass surgery) during the procedure or after it. Also, no pt experienced any coronary arterial complication (dissection, occlusion or thrombosis) or an elevation of post-procedure CK. Three pts developed transient ST elevation during balloon inflation and 1 pt experienced chest pain. *Conclusions:* OCT imaging using an imaging wire during intracoronary balloon inflation is feasible and safe. High quality images can be obtained and provide unique arterial anatomic information. The development of ischemia as a consequence of balloon inflation limits the duration of imaging.

1151-199 Hyperemic Pulse Transmission Coefficient: A Novel Index for the Functional Assessment of Microvascular Integrity Following Percutaneous Coronary Interventions

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Background: Pulse transmission coefficient (PTC) is a novel non-hyperemic parameter that calculates the transmission of high frequency components of the pressure signal through a stenosis. It correlates with fractional flow reserve and increases after percutaneous coronary intervention (PCI). Hyperemic PTC may reflect the change in resistance to flow imposed by acute microvascular dysfunction and may identify patients at risk for events after PCI. This study was designed to test the hypothesis that hyperemic PTC may serve as an index for microvascular integrity following PCI. Methods: Pressure signals were obtained by pressure wire in 27 pts. (27 lesions) with stable angina who underwent PCI. Rest and hyperemic PTC were calculated, at baseline and post PCI, as the ratio between distal and proximal high frequency components of the pressure waveform across the lesion. Results: Based on in-hospital major adverse cardiac events occurrence, patients were divided to group A (n=23) with uneventful procedure, and group B (n=4) with post procedure non-Q-wave myocardial infarction. At baseline, hyperemic PTC was significantly lower than rest PTC in both groups. After PCI, hyperemic PTC was still lower than rest PTC only in group A, whereas it was significantly higher than rest PTC in group B (Table). Conclusions: PTC is a novel non-hyperemic parameter for physiologic assessment of coronary stenoses. Hyperemic PTC may serve as an adjunct index for the functional assessment of microvascular integrity following PCI.

Rest and Hyperemic PTC at Baseline and Following PCI

	Baseline			Post PCI		
	Rest PTC	Hyperemic PTC	P value	Rest PTC	Hyperemic PTC	P value
Group A (n = 23)	0.14±0.16	0.02±0.03	<0.01	0.85±0.11	0.47±0.22	<0.01
Group B (n = 4)	0.27±0.14	0.04±0.02	<0.05	0.67±0.07	0.89±0.04	<0.01

1151-200 Quantitative and Qualitative Image Comparison Between Intravascular Ultrasound and Optical Coherence Tomography

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Background: Optical coherence topography (OCT) represents a promising new technology for intracoronary imaging. The aim of this study was to compare OCT to intravascular ultrasound (IVUS) imaging in vivo porcine coronary arteries. **Methods:** A new retro-flush OCT catheter was used to obtain images. A 50% contrast and 50% lactated ringers solution was injected to remove blood from the field of view. Both OCT and IVUS pictures were obtained with digital acquisition systems. We compared 13 images: 2 left main coronary artery, 5 left anterior descending artery (LAD), 2 diagonal, and 4 right coronary artery). For each image run multiple measurements and qualitative analysis were performed. **Results:** Imaging runs with the retro-flush catheter were similar in duration to those from IVUS. Both cross-sectional and longitudinal views were obtained. Both devices tracked the guide wire easily. 26 paired measurements of external elastic membrane diameter were compared between IVUS and OCT. There were no differences between IVUS 3.31mm ± 0.68mm and OCT 3.46mm ± 0.75mm, p = 0.48. Layers of the arterial wall were more distinguishable with OCT than with IVUS. OCT allowed for better localization of the side branch origin as well as better visualization of the distal arterial features. Additionally, peri-arterial venous structures not seen with IVUS were identifiable by OCT. An induced wire dissection was not detected by IVUS but was readily identifiable by OCT. There were no complications with either the IVUS or OCT imaging acquisition. **Conclusions:** OCT provided comparable quantitative image measurements with IVUS but defined qualitative vessel features more precisely.

1151-201 Mechanical Safety of the Contact With the Wall Coronary Thermography Methods: Comparison With Catheters and Guidewires

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Background: Due to the current technical limitations of performing non-contact intravascular thermography, sensor-based thermography is being currently used to assess arterial wall temperature. Sensors include thermistors and thermocouples. In order for these sensors to give a measurement, good thermal contact with the arterial wall has to be established. The purpose of this study was to examine the safety of such a "thermal contact" and evaluate the impact on the arterial wall.

Methods: As a thermographic system we used the ThermoSense (Thermocore Medical Systems Ltd, UK) device. The system is using a thermography catheter with 4 thermistor sensors attached at the end of super-elastic projections. When the catheter is in measuring configuration, the sensors come in close contact with the arterial wall and a motorized pullback is engaged to map the three dimensional distribution of temperature. We studied the proximal right coronary artery in 10 non-atherosclerotic pigs. Pigs were separated in 2 groups: In group A (5 pigs) we performed a single thermographic scan for a total length of 40mm, using a pullback speed of 0,3mm/sec. In group B we performed a single pullback (same length and speed) of a stent (3.0/18mm) catheter without inflating it. Animals were sacrificed immediately, and histology and electron microscopy were performed.

Additionally, we measured the force applied on the arterial wall using a very sensitive pressure meter (Kern Inc, Germany). Measurements were also performed in the case of commonly used coronary guidewires and catheters.

Results: Scanning electron microscopy showed that in the case of thermography the sensors caused impairement of the endothelium that was strictly limited to the sensor-wall contact area, while the basic membrane was left unharmed. Denudation was worse in the case of the uninflated stent catheter.

Wall pressure measurents showed that contact thermography does not apply higher wall pressures than standard guidewires and catheters.

Conclusions: All intracoronary catheters have an impact on the endothelium and its function. However, when these devices are carefully used, risks of events are extremely low.

1151-202 Benefits of Intracardiac Echocardiography in the Guidance of Percutaneous Transcatheter Closure of Atrial Septal Defect and Patent Foramen Ovale

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Background: Both transesophageal echocardiography (TEE) and intracardiac echocardiography (ICE) are used to guide the percutaneous transcatheter closure (PTC) of secundum atrial septal defects (ASD) and patent foramen ovale (PFO). It is not known whether ICE and TEE are equivalent in this regard.

Methods: We retrospectively compared 22 TEE guided vs. 23 ICE guided PTC in 45 consecutive patients (30 PFO; 15 ASD; mean age 50; 44% male). Adequate visualization of the septum, successful device deployment, catheterization lab room time, procedure time, fluoroscopy time, total physician time (defined as the sum of individual physician procedure times), and imaging-related (defined as those being directly related to the ICE catheter or TEE probe) complications were analyzed. We also compared TEE and ICE in 24 patients in whom a TEE performed prior to ICE guided PTC was available to examine specific echocardiographic features of the septum. All TEE guided PTC were performed using general anesthesia for safety and comfort.

Results: Procedural success rates were similar in both TEE and ICE guided PTC (95 vs. 96%, p=NS), with failure occurring in 1 patient with an ASD diameter exceeding the maximum device size and in 1 with a PFO unable to be crossed with a guidewire. Room time was significantly greater in the TEE vs. ICE guided PTC (110 vs. 89 min, p=0.02), as was total physician time (207 vs. 153 min, p<0.001), but procedure time (69 vs. 68 min, p=NS) and fluoroscopic time were not significantly different (11 vs. 11 min, p= NS). There were no major PTC or imaging related complications in either group. Among echo variables, when TEE was compared to ICE, there were no significant differences in interatrial septal mobility (mean difference 0.9 ± 6.4 mm, p=NS), mean PFO tunnel length (1.7 ± 3.5 mm, p= NS), and mean ASD diameter (-1.1 ± 3.0 mm, p=NS). Analysis of Color Doppler flow across the defect showed good agreement between modalities (Kappa 0.62, p=0.002).

Conclusions: Procedural success and imaging related complications were similar in